



RECEIVED  
MAR 22 2002  
TECH CENTER 1600/2900

SEQUENCE LISTING

<110> Ludevid, Doloros  
Torrent, Margarita  
Alvarez, Inaki  
Perez, Pascual

<120> Amino acid-enriched plant protein  
reserves, particularly lysine-enriched maize gamma-zein, and  
plants expressing such proteins

<130> 50062/004001

<140> 09/117,246

<141> 1998-12-03

<150> PCT/FR97/00167

<151> 1997-01-28

<150> FR96/01004

<151> 1996-01-29

<160> 11

<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Artificial Sequence

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<223> based on Maize

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<213> Artificial Sequence

<220>

<223> based on Maize

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<211> 17

<212> PRT

<213> Maize

<400> 3

Ile Glu Phe Lys Pro Lys Pro Lys Pro Lys Pro Lys Glu Phe Leu Gln



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Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Pro Gln Pro His Pro	85	90	95	
cag cca cac cca tgc ccg tgc caa cag ccg cat cca agc ccg tgc cag				336
Gln Pro His Pro Cys Pro Cys Gln Gln Pro His Pro Ser Pro Cys Gln	100	105	110	
ctg cag gga acc tgc ggc gtt ggc agc acc ccg atc ctg ggc cag tgc				384
Leu Gln Gly Thr Cys Gly Val Gly Ser Thr Pro Ile Leu Gly Gln Cys	115	120	125	
gtc gag ttt ctg agg cat cag tgc agc ccg acg gcg acg ccc tac tgc				432
Val Glu Phe Leu Arg His Gln Cys Ser Pro Thr Ala Thr Pro Tyr Cys	130	135	140	
tcg cct cag tgc cag tcg ttg cgg cag cag tgt tgc cag cag ctc agg				480
Ser Pro Gln Cys Gln Ser Leu Arg Gln Gln Cys Cys Gln Gln Leu Arg	145	150	155	160
cag gtg gag ccg cag cac cgg tac cag gcg atc ttc ggc ttg gtc ctc				528
Gln Val Glu Pro Gln His Arg Tyr Gln Ala Ile Phe Gly Leu Val Leu	165	170	175	
cag tcc atc ctg cag cag cag ccg caa agc ggc cag gtc gcg ggg ctg				576
Gln Ser Ile Leu Gln Gln Gln Pro Gln Ser Gly Gln Val Ala Gly Leu	180	185	190	
ttg gcg gcg cag ata gcg cag caa ctg acg gcg atg tgc ggc ctg cag				624
Leu Ala Ala Gln Ile Ala Gln Gln Leu Thr Ala Met Cys Gly Leu Gln	195	200	205	
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 35 40 45  
 Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Val  
 50 55 60  
 His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro  
 65 70 75 80  
 Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Pro Gln Pro His Pro

				85				90					95				
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Leu	Gln	Gly	Thr	Cys	Gly	Val	Gly	Ser	Thr	Pro	Ile	Leu	Gly	Gln	Cys		
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Val	Glu	Phe	Leu	Arg	His	Gln	Cys	Ser	Pro	Thr	Ala	Thr	Pro	Tyr	Cys		
	130					135					140						
Ser	Pro	Gln	Cys	Gln	Ser	Leu	Arg	Gln	Gln	Cys	Cys	Gln	Gln	Leu	Arg		
145					150					155					160		
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				165					170						175		
Gln	Ser	Ile	Leu	Gln	Gln	Gln	Pro	Gln	Ser	Gly	Gln	Val	Ala	Gly	Leu		
		180						185					190				
Leu	Ala	Ala	Gln	Ile	Ala	Gln	Gln	Leu	Thr	Ala	Met	Cys	Gly	Leu	Gln		
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gcc	acc	tcc	acg	cat	aca	agc	ggc	ggc	tgc	ggc	tgc	cag	cca	ccg	ccg	96	
Ala	Thr	Ser	Thr	His	Thr	Ser	Gly	Gly	Cys	Gly	Cys	Gln	Pro	Pro	Pro		
			20					25					30				
ccg	gtt	cat	cta	ccg	ccg	ccg	gtg	cat	ctg	cca	cct	ccg	gtt	cac	ctg	144	
Pro	Val	His	Leu	Pro	Pro	Pro	Val	His	Leu	Pro	Pro	Pro	Val	His	Leu		
		35					40					45					
cca	cct	ccg	gtg	cat	ctc	cca	ccg	ccg	gtc	cac	ctg	ccg	ccg	ccg	gtc	192	
Pro	Pro	Pro	Val	His	Leu	Pro	Pro	Pro	Val	His	Leu	Pro	Pro	Pro	Val		
	50					55					60						
cac	ctg	cca	ccg	ccg	gtc	cat	gtg	ccg	ccg	ccg	gtt	cat	ctg	ccg	ccg	240	
His	Leu	Pro	Pro	Pro	Val	His	Val	Pro	Pro	Pro	Val	His	Leu	Pro	Pro		
	65				70				75						80		
cca	cca	tgc	cac	tac	cct	act	caa	ccg	ccc	cgg	atc	gaa	ttc	aaa	cca	288	
Pro	Pro	Cys	His	Tyr	Pro	Thr	Gln	Pro	Pro	Arg	Ile	Glu	Phe	Lys	Pro		
				85					90					95			
aag	cca	aag	ccg	aag	cca	aaa	gaa	ttc	aaa	cca	aag	cca	aag	ccg	aag	336	
Lys	Pro	Lys	Pro	Lys	Pro	Lys	Glu	Phe	Lys	Pro	Lys	Pro	Lys	Pro	Lys		
			100					105						110			

cca aaa gaa ttc ctg cag ccc ctg cag gga acc tgc ggc gtt ggc agc	384
Pro Lys Glu Phe Leu Gln Pro Leu Gln Gly Thr Cys Gly Val Gly Ser	
115 120 125	
acc ccg atc ctg ggc cag tgc gtc gag ttt ctg agg cat cag tgc agc	432
Thr Pro Ile Leu Gly Gln Cys Val Glu Phe Leu Arg His Gln Cys Ser	
130 135 140	
ccg acg gcg acg ccc tac tgc tcg cct cag tgc cag tcg ttg cgg cag	480
Pro Thr Ala Thr Pro Tyr Cys Ser Pro Gln Cys Gln Ser Leu Arg Gln	
145 150 155 160	
cag tgt tgc cag cag ctc agg cag gtg gag ccg cag cac cgg tac cag	528
Gln Cys Cys Gln Gln Leu Arg Gln Val Glu Pro Gln His Arg Tyr Gln	
165 170 175	
gcg atc ttc ggc ttg gtc ctc cag tcc atc ctg cag cag cag ccg caa	576
Ala Ile Phe Gly Leu Val Leu Gln Ser Ile Leu Gln Gln Gln Pro Gln	
180 185 190	
agc ggc cag gtc gcg ggg ctg ttg gcg gcg cag ata gcg cag caa ctg	624
Ser Gly Gln Val Ala Gly Leu Leu Ala Ala Gln Ile Ala Gln Gln Leu	
195 200 205	
acg gcg atg tgc ggc ctg cag cag ccg act cca tgc ccc tac gct gct	672
Thr Ala Met Cys Gly Leu Gln Gln Pro Thr Pro Cys Pro Tyr Ala Ala	
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gcc ggc ggt gtc ccc cac tga	693
Ala Gly Gly Val Pro His *	
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Met Arg Val Leu Leu Val Ala Leu Ala Leu Leu Ala Leu Ala Ala Ser	
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Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu	
35 40 45	
Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val	
50 55 60	
His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro	
65 70 75 80	
Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Ile Glu Phe Lys Pro	
85 90 95	
Lys Pro Lys Pro Lys Pro Lys Glu Phe Lys Pro Lys Pro Lys Pro Lys	
100 105 110	
Pro Lys Glu Phe Leu Gln Pro Leu Gln Gly Thr Cys Gly Val Gly Ser	
115 120 125	
Thr Pro Ile Leu Gly Gln Cys Val Glu Phe Leu Arg His Gln Cys Ser	
130 135 140	

Pro Thr Ala Thr Pro Tyr Cys Ser Pro Gln Cys Gln Ser Leu Arg Gln  
 145 150 155 160  
 Gln Cys Cys Gln Gln Leu Arg Gln Val Glu Pro Gln His Arg Tyr Gln  
 165 170 175  
 Ala Ile Phe Gly Leu Val Leu Gln Ser Ile Leu Gln Gln Gln Pro Gln  
 180 185 190  
 Ser Gly Gln Val Ala Gly Leu Leu Ala Ala Gln Ile Ala Gln Gln Leu  
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 gcc acc tcc acg cat aca agc ggc ggc tgc ggc tgc cag cca ccg ccg 96  
 Ala Thr Ser Thr His Thr Ser Gly Gly Cys Gly Cys Gln Pro Pro Pro  
 20 25 30  
 ccg gtt cat cta ccg ccg ccg gtg cat ctg cca cct ccg gtt cac ctg 144  
 Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu  
 35 40 45  
 cca cct ccg gtg cat ctc cca ccg ccg gtc cac ctg ccg ccg ccg gtc 192  
 Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val  
 50 55 60  
 cac ctg cca ccg ccg gtc cat gtg ccg ccg ccg gtt cat ctg ccg ccg 240  
 His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro  
 65 70 75 80  
 cca cca tgc cac tac cct act caa ccg ccc cgg cct cag cct cat ccc 288  
 Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Pro Gln Pro His Pro  
 85 90 95  
 cag cca cac cca tgc ccg tgc caa cag ccg cat cca agc ccg tgc cag 336  
 Gln Pro His Pro Cys Pro Cys Gln Gln Pro His Pro Ser Pro Cys Gln  
 100 105 110  
 atc gaa ttc aaa cca aag cca aag ccg aag cca aaa gaa ttc ctg cag 384  
 Ile Glu Phe Lys Pro Lys Pro Lys Pro Lys Pro Lys Glu Phe Leu Gln  
 115 120 125  
 ccc ctg cag gga acc tgc ggc gtt ggc agc acc ccg atc ctg ggc cag 432

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Cys	Val	Glu	Phe	Leu	Arg	His	Gln	Cys	Ser	Pro	Thr	Ala	Thr	Pro	Tyr	
145					150				155					160		
tgc	tgc	cct	cag	tgc	cag	tgc	ttg	cgg	cag	cag	tgt	tgc	cag	cag	ctc	528
Cys	Ser	Pro	Gln	Cys	Gln	Ser	Leu	Arg	Gln	Gln	Cys	Cys	Gln	Gln	Leu	
				165				170						175		
agg	cag	gtg	gag	ccg	cag	cac	cgg	tac	cag	gcg	atc	ttc	ggc	ttg	gtc	576
Arg	Gln	Val	Glu	Pro	Gln	His	Arg	Tyr	Gln	Ala	Ile	Phe	Gly	Leu	Val	
			180					185					190			
ctc	cag	tcc	atc	ctg	cag	cag	cag	ccg	caa	agc	ggc	cag	gtc	gcg	ggg	624
Leu	Gln	Ser	Ile	Leu	Gln	Gln	Gln	Pro	Gln	Ser	Gly	Gln	Val	Ala	Gly	
		195					200					205				
ctg	ttg	gcg	gcg	cag	ata	gcg	cag	caa	ctg	acg	gcg	atg	tgc	ggc	ctg	672
Leu	Leu	Ala	Ala	Gln	Ile	Ala	Gln	Gln	Leu	Thr	Ala	Met	Cys	Gly	Leu	
	210					215					220					
cag	cag	ccg	act	cca	tgc	ccc	tac	gct	gct	gcc	ggc	ggg	gtc	ccc	cac	720
Gln	Gln	Pro	Thr	Pro	Cys	Pro	Tyr	Ala	Ala	Ala	Gly	Gly	Val	Pro	His	
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tga																723
*																

<210> 11  
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<400> 11  
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 20 25 30  
 Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu  
 35 40 45  
 Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val  
 50 55 60  
 His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro  
 65 70 75 80  
 Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Pro Gln Pro His Pro  
 85 90 95  
 Gln Pro His Pro Cys Pro Cys Gln Gln Pro His Pro Ser Pro Cys Gln  
 100 105 110  
 Ile Glu Phe Lys Pro Lys Pro Lys Pro Lys Pro Lys Glu Phe Leu Gln  
 115 120 125  
 Pro Leu Gln Gly Thr Cys Gly Val Gly Ser Thr Pro Ile Leu Gly Gln  
 130 135 140  
 Cys Val Glu Phe Leu Arg His Gln Cys Ser Pro Thr Ala Thr Pro Tyr

145					150					155				160
Cys	Ser	Pro	Gln	Cys	Gln	Ser	Leu	Arg	Gln	Gln	Cys	Cys	Gln	Gln
				165					170				175	
Arg	Gln	Val	Glu	Pro	Gln	His	Arg	Tyr	Gln	Ala	Ile	Phe	Gly	Leu
			180					185					190	
Leu	Gln	Ser	Ile	Leu	Gln	Gln	Gln	Pro	Gln	Ser	Gly	Gln	Val	Ala
		195					200					205		
Leu	Leu	Ala	Ala	Gln	Ile	Ala	Gln	Gln	Leu	Thr	Ala	Met	Cys	Gly
	210					215					220			
Gln	Gln	Pro	Thr	Pro	Cys	Pro	Tyr	Ala	Ala	Ala	Gly	Gly	Val	Pro
225					230					235				240